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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,520	07/30/2003	Barry M. Verdegan	4191-00308	9250

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EXAMINER
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MATZEK, MATTHEW D

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/630,520

Applicant(s)

VERDEGAN ET AL.

Examiner

Matthew D. Matzek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 99-102 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 99-102 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/14/03</u>  | 6) <input type="checkbox"/> Other: _____                                    |

***Election/Restrictions***

1. Applicant's election with traverse of the trimodal embodiment claims: 99-102 in the reply filed on 7/11/2005 is acknowledged. The traversal is on the ground(s) that the application may be most efficiently examined if all the identified groups were to be searched at one time. This is not found persuasive because a plurality of disclosed patentably distinct species have been claimed and are subject to an election of species in order for Examiner to efficiently and effectively examine the instant application.

The requirement is still deemed proper and is therefore made FINAL.

2. Along with the election the Amendment dated 7/11/2005 includes amended claims 99-102. The amended claims contain no new matter. Claims 1-98 have been canceled. Examiner has withdrawn the rejections associated with the canceled claims.

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

3. Claims 99-100 and 102 are rejected under 35 U.S.C. 102(b) as being anticipated by Till et al. (US Patent 3,073,735).

a. Till et al. disclose a method for producing filters that comprise extremely fine fibers having a diameter from 0.5 micron to about 10 microns and other textile fibers having diameters from 10 microns and greater (col. 2, line 64 – col. 3, line 2). The fine fibers may be made of vinyl chloride and vinyl acetate copolymer (col. 6, lines 32-35) and the coarse fibers may be made from rayon (col. 6, lines 40-44). The fine fibers are dispersed and collected in a controlled manner and are intermingled with and combined

with coarse fibers to produce a highly efficient filter media that does not excessively increase the resistance to fluid flow (col. 6, lines 4-11). Through the removal of partition 16 a filter with random distribution may be created (col. 2, lines 50-55). It is reasonable to presume that if the fibers are randomly distributed with the larger coarse fibers the fine fibers may agglomerate creating bundles or pockets of fine fibers throughout the filter. On the other hand, the inclusion of the partition allows for the fine fibers to concentrate at one face of the filter. The applied embodiments comprise fibers of all the instantly claimed diameters of the trimodal distribution, and as such anticipates the instantly claimed trimodal distribution.

- b. Claim 100 is rejected as Figure 2 anticipates the instantly claimed embodiment with progressively larger diameter fibers supported the adjacent smaller diameter fiber sets (col. 16-38).
4. Claims 99 and 102 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilson et al. (US Patent 6,155,432).
- a. Wilson et al. disclose a high performance filter comprising a mixture of carbon, ceramic, glass or silica fibers and nanofibers (whiskers) (Abstract and col. 5, lines 3-6). The fibers of the applied patent are generally from about 3 microns to 20 microns and the nanofibers are from about 0.03 to about 5 microns in diameter (col. 5, lines 12-23). The fibers may be made of ceramic and glass fibers and the nanofibers may be made of ceramic, silica and alumina (col. 5, lines 27-66). The filter media comprises a blend of the conventional inorganic fibers and nanofibers creating a uniform distribution throughout the filter (col. 5, lines 3-7). It is reasonable to presume that if the fibers are

uniformly distributed with the larger coarse fibers the fine fibers may agglomerate creating bundles or pockets of fine fibers throughout the filter. The applied embodiments comprise fibers of all the instantly claimed diameters of the trimodal distribution, and as such anticipates the instantly claimed trimodal distribution.

5. Claim 99 is rejected under 35 U.S.C. 102(b) as being anticipated by Fischer (US Patent 5,800,706).

a. Fischer et al. disclose a filter comprising nanofiber and larger diameter fibers to serve as scaffolding to hold the smaller nanofibers apart and prevent the nanofiber bed from collapsing (Abstract). The nano-fibers, tubes, fibrils of the '706 patent are carbon (col. 7, lines 50-52). The scaffold may be polymeric, inorganic, glass or metallic (col. 7, lines 40-45). The Fischer et al. filter is directed to use for both liquids and gases (Abstract). The invention is a composition of matter consisting essentially of a three-dimensional, macroscopic assemblage of a multiplicity of randomly oriented nanofibers blended with larger scaffolding fibers (col. 8, lines 56-60). This anticipates Applicant's macrostructure A and microstructure 1. The diameter of the nanofibers is preferably less than 500 nm and the scaffolding fibers if >1.0 micron (col. 4, lines 25-40). This anticipates the first two sets of fiber diameters. The diameter of the scaffolding fiber is at least 10, preferably 50, more preferably 100 and most preferably 200 times greater than the diameter of the nanofibers (col. 7, lines 27-31). This allows for scaffolding fiber diameters ranging from >1.0 micron to ~200 microns. The applied embodiment comprises fibers of all of the instantly claimed diameters of the trimodal distribution and as such anticipates the instantly claimed trimodal distribution.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 101 rejected under 35 U.S.C. 103(a) as being unpatentable over Till et al. (US Patent 3,073,735) as applied to claim 100 above, and further in view of Takaoka et al. (US 5,670,247) and Chung et al. (US 6,743,273). The invention of Till et al. is silent as to the use of fibrillated para-aramid polymer and cellulosic microfibers.

a. Takaoka et al. teach a photoreactive noxious substance purging agent comprising microfibrillated microfibers (Abstract). The applied article may satisfactorily utilized as a filter (col. 17, lines 63-67). The filter may comprise fibrillated microfibers of aramid and the diameter of the fibrillated fibers are preferably 1 micron or less (col. 7, lines 40-45). This meets the limitation set forth for the second set of fibers. The Examiner takes the position that aramid fibers are the equivalent to para-aramid fibers. It is advantageous to use aramid fibers instead of other fibers due to their resistance to degradation (col. 8, lines 8-15).

b. Chung et al. teach a filter comprising fine fibers and coarse fibers, nanofibers and microfibers, respectively (col. 1, lines 22-27 and col. 2, lines 50-57). The microfibers have a diameter of no larger than 10 microns (col. 2, lines 55-57). The microfibers may be made of woven or nonwoven substrates comprising cellulosic matrices (col. 5, lines

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10-20). The cellulosic substrate provides support for the nanofibers. It is very well known in the art to use cellulosic fibers for filtration.

c. Since Takaoka et al., Chung et al., and Till are from the same field of endeavor (i.e. microfiber filters) the purposes disclosed by Takaoka et al. and Chung et al. would have been recognized in the pertinent art of Till.

d. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the filter of Till with the motivation of providing the filter with the chemical-resistant fibers of Takaoka et al. and the filter readily available and inexpensive cellulosic fibers of Chung et al.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew D. Matzek whose telephone number is (571) 272-2423.

The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mdm

*MDM*



**NORCA TORRES  
PRIMARY EXAMINER**